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EXAMINER

NGUYEN, HANH N

ART UNIT PAPER NUMBER

2834

DATE MAILED: 12/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/041,613

Applicant(s)

CHO ET AL.

Examiner

Nguyen N Hanh

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 October 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Remarks

In view of amendment, the Examiner withdraws the objections to the specification, the objections to formerly claims 4 and 6 and the rejections under 35 U.S.C 112, first paragraph to formerly claims 3,6,7. The cancellation of claims 1-11 and the addition of claims 12-48 has been acknowledged.

Response to Arguments

1. Applicant's arguments with respect to formerly claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 12-28 and 29-36 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 12, the limitation "wherein an outer profile of said first stator core protrudes outwardly away from said rotational shaft as said outer profile progresses toward said first end of said first stator" was not described in the specification. The specification describes in page 1, lines 23-25 "the first rotor receiving part 33a and the second rotor receiving part 36a are protruded outwardly near the first and second

separate spaces 33d and 36e along with the radial direction". Under the lights of the specification, the Examiner interprets "the outer profile" as "a circular edge that face the rotor or the square edge around the stator".

Regarding claim 29, the limitation "wherein one end of the first rotor receiving part near the first gap and an opposite end of the second rotor receiving part near the second gap are positioned on a vertical center line of the first and second stator cores and rotational shaft" was not described in the specification. Under the lights of the specification, the Examiner interprets the limitation as "the first gap and the second gap are formed to face each other along a vertical center line of the first and second stator core" (refer to page 11, lines 4-10 of the specification).

Regarding claim 30, the limitations "one of the shaft support parts and receiving a part of the rotor protruded from the stator cores" and "a pair of separation members for electromagnetically separating a pair of shaft support parts" was not described in the specification. Under the lights of the specification, the Examiner interprets the limitations as "one of the shaft support protruded from the stator cores" and "a pair of separation members are formed by using a nonconductor" (page 9, line 7 of the specification).

Claim 36 recites the limitation "wherein the pair of detent parts are respectively formed around the other end of the first rotor receiving part and the other end of the second rotor receiving part" was not described in the specification. Under the lights of the specification, the Examiner interprets the limitations as "wherein a pair of detent

parts are formed around each one end of the first and second rotor receiving parts in a rotational direction of the rotational shaft".

Claims 13-28 and 30-36 are dependent claims to claims 12 and 29.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 12,15-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ackermann et al.

Regarding claim 12, Ackermann et al. disclose a skeleton type brushless motor (preamble, patentable weight not given) comprising: a rotor (9 in Fig. 2) having a rotational shaft (4) in a center thereof; a first stator core including a first semicircular inner profile defined between first and second ends of said first stator core; a second stator core including a second semicircular inner profile defined between first and second ends of said second stator core, wherein said second stator core is connected to said first stator core such that said second semicircular inner profile faces to said first semicircular inner profile and a first gap exist between said first end of said first stator core and said first end of said second stator core, and a second gap exists between said second end of said first stator core and said second end of said second stator core; a coil winding unit (15) connected to at least one of said first and second stator cores, and a coil (16) wound on said coil winding unit, wherein an outer profile of said first stator core protrudes outwardly away from said rotational shaft as said outer profile progresses toward said first end of said first stator.

Regarding claim 15, Ackermann et al. also disclose a motor further comprising: a first detent part formed in said first semicircular inner profile adjacent to said first end of said first stator core, said first detent part being characterized by a displacement of said inner profile outwardly away from said rotational shaft.

Regarding claim 16, Ackermann et al. also disclose a motor further comprising a second detent part formed in said second semicircular inner profile adjacent to said second end of said second stator core, said second detent part being characterized by a displacement of said inner profile outwardly away from said rotational shaft.

Regarding claim 17, Ackermann et al. also disclose a motor wherein said first and second detent parts are symmetrically arranged around a centerline of said rotational shaft.

Regarding claim 18, Ackermann et al. also disclose a motor wherein said first and second gaps are symmetrically arranged around a centerline of said rotational shaft.

Regarding claim 19, Ackermann et al. also disclose a motor wherein said first stator core is electrically separated from said second stator core at said first gap and said second gap.

Regarding claim 20, Ackermann et al. also disclose a motor wherein said first stator core is electrically connected to said second stator core at a point remote from said first and second gaps (at point 18 or 21 in Fig. 2).

Regarding claim 21, Ackermann et al. also disclose a motor wherein said rotor includes a permanent magnet encircling said shaft.

Regarding claim 22, Ackermann et al. also disclose a motor wherein a distance of said first gap is equal to a distance of said second gap.

4. Claim 29 is rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi.

Regarding claim 29, Hayashi disclose a skeleton type brushless motor (preamble, patentable weight not given) comprising: a rotor (11 in Fig. 2) having a rotational shaft (14) in a center thereof; and a first stator core (15 in Fig. 4) having a first rotor receiving part (15a) formed therein for receiving the rotor; a second stator core (16) having a second rotor receiving part (16a) formed therein for receiving the rotor; first and second gaps (a and b in Fig. 2) formed between the first and second stator cores, respectively; a coil winding unit (18) connected to the first and second stator cores; and a coil (17) wound on the coil winding unit; wherein the first gap and the second gap are formed to face each other along a vertical center line of the first and second stator core (Fig. 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ackermann et al.

Regarding claims 23 and 24, Ackermann et al. show all limitations of the claimed invention except showing a distance of said first gap and a distance of said second gap

is approximately 0.3 to 1 mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make a distance of said first gap and a distance of said second gap is approximately 0.3 to 1 mm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

6. Claims 25, 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ackermann et al. in view of Jeske.

Regarding claim 25, Ackermann et al. show all limitations of the claimed invention except showing motor further comprising: a sensor for sensing a rotational position of said rotor, wherein said sensor is located approximately 10 to 20 degrees from one of said first and second gaps and upstream from said one of said first and second gaps, relative to a rotational direction of said rotor.

However, Jeske discloses motor further comprising: a sensor (14 in Fig. 2) for sensing a rotational position of said rotor, wherein said sensor is located approximately 10 to 20 degrees from the centerline in vertical direction and on opposite direction of rotation (Col. 3, lines 17-25) for the purpose of optimizing the motor efficiency.

Since Ackermann et al. and Jeske are in the same field of endeavor, the purpose disclosed by Jeske would have been recognized in the pertinent art of Ackermann et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Ackermann et al. by using a sensor for sensing a rotational position of said rotor, wherein said sensor is located approximately

10 to 20 degrees from one of said first and second gaps and upstream from said one of said first and second gaps, relative to a rotational direction of said rotor as taught by Jeske for the purpose of optimizing the motor efficiency.

Regarding claim 44, it is noted that all limitations of the claimed invention has been fulfilled by Ackermann et al. and Jeske as in claim 25.

Regarding claim 45, Ackermann et al. also show the motor wherein a pair of detent parts (26a and 27a in Fig. 2), having a larger radius than radii of the first and second rotor receiving parts from the rotational shaft, are formed around one end of each of the first and second rotor receiving parts in a rotational direction of the rotational shaft (31), and are point symmetric centering on the rotational shaft.

7. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ackermann et al. in view of McKinnon et al.

Regarding claim 26, Ackermann et al. show all limitations of the claimed invention except showing motor further comprising: a first shaft support part supporting one end of said rotational shaft; a first separation member located between said first shaft support part and said first and second stator cores; a second shaft support part supporting another end of said rotational shaft; and a second separation member located between said second shaft support part and said first and second stator cores.

However, McKinnon et al. disclose motor further comprising: a first shaft support part supporting one end of said rotational shaft (34 in Fig. 2); a first separation member (26) located between said first shaft support part and said first and second stator cores; a second shaft support part (34) supporting another end of said rotational shaft; and a

second separation member (26) located between said second shaft support part and said first and second stator cores for the purpose of fixing the rotor.

Since Ackermann et al. and McKinnon are in the same field of endeavor, the purpose disclosed by McKinnon would have been recognized in the pertinent art of Ackermann et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Ackermann et al. by using a first shaft support part supporting one end of said rotational shaft; a first separation member located between said first shaft support part and said first and second stator cores; a second shaft support part supporting another end of said rotational shaft; and a second separation member located between said second shaft support part and said first and second stator cores as taught by McKinnon et al. for the purpose of Fixing the rotor.

8. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ackermann et al. in view of McKinnon et al. and further in view of Hayashi.

Regarding claim 27, Ackermann et al. and McKinnon et al. show all limitations of the claimed invention except showing the motor further comprising: a first cover extending from said first separation member toward said first and second stator cores and covering said first gap; and a second cover extending from said second separation member toward said first and second stator cores and covering said second gap.

However, Hayashi discloses the motor further comprising: a first cover (19a in Fig. 4) and a second cover (19b) covering said first and said second gap (Fig. 2) for the purpose of protecting the rotor.

Since Ackermann et al., McKinnon et al. and Hayashi are in the same field of endeavor, the purpose disclosed by Hayashi would have been recognized in the pertinent art of Ackermann et al. and McKinnon et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Ackermann et al. and McKinnon et al. by using a first cover extending from said first separation member toward said first and second stator cores and covering said first gap; and a second cover extending from said second separation member toward said first and second stator cores and covering said second gap as taught by McKinnon et al. for the purpose of protecting the rotor.

9. Claims 13,14,28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ackermann et al. in view of Erdman et al.

Regarding claim 13, Ackermann et al. show all limitations of the claimed invention except showing the motor wherein an outer profile of the second stator core protrudes outwardly away from said rotational shaft as said outer profile progresses toward said first end of said stator.

However, Erdmann et al. disclose the motor wherein an outer profile of the stator core protrudes outwardly away from said rotational shaft as said outer profile progresses toward the vertical center line of the stator for the purpose of accommodating the protrusion of the stator core.

Since Ackermann et al. and Erdman et al. are in the same field of endeavor, the purpose disclosed by Erdman et al. would have been recognized in the pertinent art of Ackermann et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Ackermann et al. by making an outer profile of the stator core protrudes outwardly away from said rotational shaft as said outer profile progresses toward said first end of said stator as taught by Erdmann et al. for the purpose of accommodating the protrusion of the stator core.

Regarding claim 14, it would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Ackermann et al. by making an outer profile of the first stator core protrudes outwardly away from said rotational shaft as said outer profile progresses toward said second end of said first stator and wherein an outer profile of the second stator core protrudes outwardly away from said rotational shaft as said outer profile progresses toward said second end of said second stator as taught by Erdmann et al. for the purpose of accommodating the protrusion of the stator core.

Regarding claim 28, Ackermann et al. show all limitations of the claimed invention except showing the motor further comprising: a drive control unit connected to said coil winding, wherein said drive control unit includes an AC capacitor for connection to utility power for decreasing a voltage of the utility power, and a rectification circuit for rectifying the utility power.

However, Erdmann et al. disclose the motor further comprising: a drive control unit connected to said coil winding (Col. 8, lines 61-68 and Col. 9, lines 1-5), wherein said drive control unit includes an AC capacitor for connection to utility power for

decreasing a voltage of the utility power, and a rectification circuit for rectifying the utility power (Col. 17, lines 39-50) for the purpose of controlling the motor.

Since Ackermann et al. and Erdman et al. are in the same field of endeavor, the purpose disclosed by Erdman et al. would have been recognized in the pertinent art of Ackermann et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Ackermann et al. by using a drive control unit connected to said coil winding, wherein said drive control unit includes an AC capacitor for connection to utility power for decreasing a voltage of the utility power, and a rectification circuit for rectifying the utility power as taught by McKinnon et al. for the purpose of controlling the motor.

10. Claims 30,31,37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi in view of McKinnon et al.

Regarding claim 30, Hayashi shows all limitations of the claimed invention except showing the motor further comprising: a pair of separation members for electromagnetically separating a pair of shaft support parts, rotatably supporting the rotational shaft on both sides of the stator cores, from the stator cores, each separation member respectively being inserted between the stator cores and one of the shaft support parts protruded from the stator cores.

However, McKinnon et al. disclose the motor further comprising: a pair of separation members (28 in Fig. 4) for electromagnetically separating a pair of shaft support parts (Col. 3, lines 4-8), rotatably supporting the rotational shaft on both sides of

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the stator cores, from the stator cores, each separation member respectively being inserted between the stator cores and one of the shaft support parts protruded from the stator cores (Fig. 4 and 6) for the purpose of fixing the rotor.

Since Hayashi and McKinnon et al. are in the same field of endeavor, the purpose disclosed by McKinnon et al. would have been recognized in the pertinent art of McKinnon.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Hayashi by using a pair of separation members for electromagnetically separating a pair of shaft support parts, rotatably supporting the rotational shaft on both sides of the stator cores, from the stator cores, each separation member respectively being inserted between the stator cores and one of the shaft support parts protruded from the stator cores as taught by McKinnon et al. for the purpose of fixing the rotor.

Regarding claim 37, Hayashi shows all limitations of the claimed invention except showing the motor further comprising: a pair of shaft support parts rotatably supporting the rotational shaft on both sides of the stator cores a pair of separation members for electromagnetically separating a pair of shaft support parts, rotatably supporting the rotational shaft on both sides of the stator cores, from the stator cores, each separation member respectively being inserted between the stator cores and one of the shaft support parts protruded from the stator cores.

However, McKinnon et al. disclose the motor further comprising: a pair of shaft support parts (34 in Fig. 4) rotatably supporting the rotational shaft on both sides of the

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stator cores a pair of separation members (28 in Fig. 4) for electromagnetically separating a pair of shaft support parts (Col. 3, lines 4-8), rotatably supporting the rotational shaft on both sides of the stator cores, from the stator cores, each separation member respectively being inserted between the stator cores and one of the shaft support parts protruded from the stator cores (Fig. 4 and 6) for the purpose of fixing the rotor.

Since Hayashi and McKinnon et al. are in the same field of endeavor, the purpose disclosed by McKinnon et al. would have been recognized in the pertinent art of McKinnon.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Hayashi by using a pair of shaft support parts rotatably supporting the rotational shaft on both sides of the stator cores a pair of separation members for electromagnetically separating a pair of shaft support parts, rotatably supporting the rotational shaft on both sides of the stator cores, from the stator cores, each separation member respectively being inserted between the stator cores and one of the shaft support parts protruded from the stator cores as taught by McKinnon et al. for the purpose of fixing the rotor.

Regarding claims 31 and 38, Hayashi also shows a cover (19a and 19b in Fig. 3 and 4) is formed for covering the first and second gaps.

11. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi in view of Jeske.

Regarding claim 32, Hayashi shows all limitations of the claimed invention except showing motor further comprising: a sensor for sensing a rotational position of the rotor is positioned around 10-20° from the symmetry line nearer to the coil winding unit in a direction opposite to a rotational direction of the rotor.

However, Jeske discloses motor further comprising: a sensor (14 in Fig. 2) for sensing a rotational position of said rotor, wherein said sensor is located approximately 10 to 20 degrees from the centerline in vertical direction and on opposite direction of rotation (Col. 3, lines 17-25) for the purpose of optimizing the motor efficiency.

Since Hayashi and Jeske are in the same field of endeavor, the purpose disclosed by Jeski would have been recognized in the pertinent art of Hayashi.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Hayashi by using a sensor for sensing a rotational position of the rotor is positioned around 10-20° from the symmetry line nearer to the coil winding unit in a direction opposite to a rotational direction of the rotor as taught by Jeski for the purpose of optimizing the motor efficiency.

12. Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi in view of Erdman et al.

Regarding claim 33, Hayashi shows all limitations of the claimed invention except showing the motor further comprising: a PCB formed with a drive control circuit, and connected to the coil winding unit in a direction of the rotational shaft.

However, Erdman et al. disclose a motor structure further comprising a PCB (circuit board 336 in Fig. 2 and Col. 9, lines 1-5) formed with a drive control circuit, and

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connected to the coil winding unit in a direction of the rotational shaft for the purpose of controlling the motor.

Since Hayashi and Erdman et al. are in the same field of endeavor, the purpose disclosed by Erdman et al. would have been recognized in the pertinent art of Hayashi.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Hayashi by using a PCB formed with a drive control circuit, and connected to the coil winding unit in a direction of the rotational shaft as taught by Erdman et al. for the purpose of controlling the motor.

Regarding claim 34, Erdman et al. also show the motor wherein the PCB includes an AC capacitor connected to utility power for decreasing a voltage of the utility power, and a rectification circuit for rectifying the utility power (Col. 17, lines 39-50).

13. Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi in view of Ackermann et al.

Regarding claims 35 and 36, Hayashi shows all limitations of the claimed invention except showing the motor wherein a pair of detent parts, having larger radius from the rotational shaft than radii of the first and second rotor receiving parts, are formed around each one end of the first and second rotor receiving parts in a rotational direction of the rotational shaft, and point symmetric centering on the rotational shaft.

However, Ackermann et al. disclose a motor structure wherein a pair of detent parts (26a and 27a in Fig. 2), having larger radius from the rotational shaft than radii of the first and second rotor receiving parts, are formed around each one end of the first

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and second rotor receiving parts in a rotational direction (31) of the rotational shaft, and point symmetric centering on the rotational shaft for the purpose of increasing torque.

Since Hayashi and Ackermann et al. are in the same field of endeavor, the purpose disclosed by Ackermann et al. would have been recognized in the pertinent art of Hayashi.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Hayashi by using a pair of detent parts, having larger radius from the rotational shaft than radii of the first and second rotor receiving parts, are formed around each one end of the first and second rotor receiving parts in a rotational direction of the rotational shaft, and point symmetric centering on the rotational shaft as taught by Ackermann et al. for the purpose of controlling the motor.

14. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi and McKinnon et al. and further in view of Jeske.

Regarding claim 39, Hayashi and McKinnon et al. show all limitations of the claimed invention except showing motor further comprising: a sensor for sensing a rotational position of the rotor is positioned around 10-20° from the symmetry line nearer to the coil winding unit in a direction opposite to a rotational direction of the rotor.

However, Jeske discloses motor further comprising: a sensor (14 in Fig. 2) for sensing a rotational position of said rotor, wherein said sensor is located approximately 10 to 20 degrees from the centerline in vertical direction and on opposite direction of rotation (Col. 3, lines 17-25) for the purpose of optimizing the motor efficiency.

Since Hayashi, McKinnon et al. and Jeske are in the same field of endeavor, the purpose disclosed by Jeski would have been recognized in the pertinent art of Hayashi and McKinnon et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Hayashi and McKinnon et al. by using a sensor for sensing a rotational position of the rotor is positioned around 10-20° from the symmetry line nearer to the coil winding unit in a direction opposite to a rotational direction of the rotor as taught by Jeski for the purpose of optimizing the motor efficiency.

15. Claims 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi in view of McKinnon et al. and further in view of Erdman et al.

Regarding claim 40, Hayashi and McKinnon et al. show all limitations of the claimed invention except showing the motor further comprising: a PCB formed with a drive control circuit, and connected to the coil winding unit.

However, Erdman et al. disclose a motor structure further comprising a PCB (circuit board 336 in Fig. 2 and Col. 9, lines 1-5) formed with a drive control circuit, and connected to the coil winding unit in.

Since Hayashi, McKinnon et al. and Erdman et al. are in the same field of endeavor, the purpose disclosed by Erdman et al. would have been recognized in the pertinent art of Hayashi and McKinnon et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Hayashi and McKinnon by using a PCB

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formed with a drive control circuit, and connected to the coil winding unit as taught by Erdman et al. for the purpose of controlling the motor.

Regarding claim 41, Erdman et al. also show the motor wherein the PCB includes an AC capacitor connected to utility power, and a rectification circuit for rectifying the utility power (Col. 17, lines 39-50).

Regarding claim 42, Erdman et al. also show the motor wherein a PCB cover (50,60,94 in Fig. 19), connected with the PCB in a length direction of the rotational shaft for covering the PCB (336), wherein a sensor receiving part (439), for receiving the sensor, is formed in (inside) the PCB cover.

16. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi in view of McKinnon et al. and further in view of Ackermann et al.

Regarding claim 43, Hayashi and McKinnon et al. show all limitations of the claimed invention except showing the motor wherein a pair of detent parts, having a larger radius from the rotational shaft than radii of the first and second rotor receiving parts, are formed around each one end of each of the first and second rotor receiving parts in a rotational direction of the rotational shaft, and point symmetric centering on the rotational shaft.

However, Ackermann et al. disclose a motor structure wherein a pair of detent parts (26a and 27a in Fig. 2), having larger radius from the rotational shaft than radii of the first and second rotor receiving parts, are formed around each one end of the first and second rotor receiving parts in a rotational direction (31) of the rotational shaft, and point symmetric centering on the rotational shaft for the purpose of increasing torque.

Since Hayashi, McKinnon et al. and Ackermann et al. are in the same field of endeavor, the purpose disclosed by Ackermann et al. would have been recognized in the pertinent art of Hayashi and McKinnon et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Hayashi and McKinnon et al. by using a pair of detent parts, having larger radius from the rotational shaft than radii of the first and second rotor receiving parts, are formed around each one end of the first and second rotor receiving parts in a rotational direction of the rotational shaft, and point symmetric centering on the rotational shaft as taught by Ackermann et al. for the purpose of controlling the motor.

17. Claims 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi in view of Jeske and further in view of Erdman et al.

Regarding claim 46, Hayashi and Jeske show all limitations of the claimed invention except showing the motor further comprising: a PCB formed with a drive control circuit, and connected to the coil winding unit.

However, Erdman et al. disclose a motor structure further comprising a PCB (circuit board 336 in Fig. 2 and Col. 9, lines 1-5) formed with a drive control circuit, and connected to the coil winding unit in.

Since Hayashi, Jeske and Erdman et al. are in the same field of endeavor, the purpose disclosed by Erdman et al. would have been recognized in the pertinent art of Hayashi and Jeske.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Hayashi and Jeske by using a PCB formed with a drive control circuit, and connected to the coil winding unit as taught by Erdman et al. for the purpose of controlling the motor.

Regarding claim 47, Erdman et al. also show the motor wherein the PCB includes an AC capacitor for being connected to utility power, and a rectification circuit for rectifying the utility power (Col. 17, lines 39-50).

Regarding claim 48, Erdman et al. also show the motor wherein a PCB cover (50,60,94 in Fig. 19), connected with the PCB in a length direction of the rotational shaft for covering the PCB (336), wherein a sensor receiving part (439), for receiving the sensor, is formed in (inside) the PCB cover.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Information on How to Contact USPTO

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh N Nguyen whose telephone number is (703)305-3466. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703)308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-1782.

HNN

December 12, 2002


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